



INHIBITION OF NONINACTIVATING Na CHANNELS OF MAMMALIAN  
OPTIC NERVE AS A MEANS OF PREVENTING OPTIC NERVE  
DEGENERATION ASSOCIATED WITH GLAUCOMA

5 Abstract of the Invention

A method and composition for altering a plausible sequence of pathological events in retinal ganglion cells associated with glaucoma, the sequence including membrane 10 depolarization, influx of millimolar amounts of  $\text{Na}^+$  via non-inactivating  $\text{Na}^+$  channels, and the lethal elevation of cell  $\text{Ca}^{2+}$  due to reversal of the  $\text{Na}^+/\text{Ca}^{2+}$  exchanger. The method includes blocking, by administration of a selected composition, of associated, non-inactivating  $\text{Na}^+$  channels in 15 retinal ganglion cells in order to limit  $\text{Na}^+/\text{Ca}^+$  exchange in the retinal ganglion cells and prevent buildup of the  $\text{Ca}^{2+}$  level in the retinal ganglion cells to a lethal level. The results in a method of preventing retinal ganglion cell death, associated with glaucoma, by administering to the 20 optic nerve of a mammal, a compound which blocks the non-inactivating sodium ion channels of the optic nerve. Alternately, said invention relates to a method of preventing optic retinal ganglion cell death in a human by administering to the retinal ganglion cells of said human a 25 compound which blocks the non-inactivating sodium ion channel of the retinal ganglion cells.